

Perioperative Evaluation and Management of Cardiac Disease in the Ambulatory Surgery Setting

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KEYWORDS

- Ambulatory surgery • Aortic stenosis • Implantable electronic devices
- Coronary artery disease • Endocarditis prophylaxis • Heart failure • Hypertension

KEY POINTS

- The busy ambulatory surgery anesthesiologist needs a concise and practical approach to cardiac evaluation.
- Despite the prolific publication of guidelines in the literature, thorough perioperative cardiac risk stratification can be difficult, especially in a busy ambulatory surgery setting.
- The emphasis of preoperative cardiac evaluation should focus on identification and stratification of patient risk while attempting to avoid routine testing and prophylactic revascularization.
- Diagnostic testing and interventions are used only when the risk of adverse outcomes is high and intervention will lower risk.

INTRODUCTION

Within the last decade the emphasis during preoperative cardiac evaluation has been on identifying and stratifying patient risk and less on routine testing and prophylactic revascularization. Therapeutic interventions have focused on medications and other strategies to modify cardiovascular morbidity and mortality.^{1,2} Anesthesia for ambulatory surgery is infrequently associated with adverse cardiac outcomes, but details of specific patient conditions are often limited. Few prospective trials are available to guide patient management decisions. The busy ambulatory surgery anesthesiologist needs a concise and practical approach to cardiac evaluation.

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HYPERTENSION

Hypertension, defined as 2 or more blood pressure (BP) measurements greater than 140/90, affects one billion individuals worldwide. Ischemic heart disease is the most common form of organ damage associated with hypertension. Hypertension is associated with risk of myocardial infarction (MI)³ or even death and it increases perioperative cardiac risk 1.3-fold.⁴

A general recommendation is that elective surgery be delayed if hypertension is severe: diastolic BP greater than 115 mm Hg or systolic BP greater than 200 mm Hg. The American College of Cardiology Foundation (ACCF) and American Heart Association (AHA) guidelines suggest that the risk of delaying a procedure be considered before deciding to improve the patient's medical status. It is unclear whether delay improves outcomes.^{4,5}

FUNCTIONAL CAPACITY

The inability to exercise indicates cardiac risk. Patients able to perform at least 4 metabolic equivalents, such as climbing 2 flights of stairs, have low cardiac risk despite other preexisting cardiac risk factors.⁶

CORONARY ARTERY DISEASE

Coronary artery disease (CAD) is often undiagnosed before a patient's first ischemic event. Although smoking, hypertension, older age, male sex, hypercholesterolemia, and family history of CAD are useful to assess symptoms or abnormal diagnostic tests, they do not predict greater risk for perioperative cardiac events. The Revised Cardiac Risk Index is a simple validated risk index for predicting perioperative cardiac risk in noncardiac surgery (**Table 1**).^{7,8} According to the 2009 ACCF/AHA guidelines, asymptomatic patients undergoing low-risk procedures in ambulatory facilities do not usually

Components of Revised Cardiac Risk Index	Points Assigned
High-risk surgery (intraoperative, intrathoracic, or suprainguinal vascular procedure)	1
Ischemic heart disease (by any diagnostic criteria)	1
History of congestive heart failure	1
History of cerebrovascular disease	1
Diabetes mellitus requiring insulin	1
Creatinine >2.0 mg/dL (176 μmol/L)	1
Revised Cardiac Risk Index Score	Risk of Major Cardiac Events ^a
0	0.4%
1	1.0%
2	2.4%
≥3	5.4%

^a Defined as cardiac death, nonfatal MI, or nonfatal cardiac arrest.

Data from Lee TH, Marcantonio ER, Mangione CM, et al. Derivation and prospective validation of a simple index for prediction of cardiac risk of major noncardiac surgery. *Circulation* 1999;100:1043–9; and Devereaux OJ, Goldman L, Cook DJ, et al. Perioperative cardiac events in patients undergoing noncardiac surgery: a review of the magnitude of the problem, the pathophysiology of the events and methods to estimate and communicate risk. *CMAJ* 2005;173:627–34.

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